JOSEPH M. GRANGE

Ph.D Candidate • University of Florida • Gainesville, FL

CONTACT

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EDUCATION

August 2007-present, University of Florida — Gainesville, FL
Ph.D Candidate, Physics
Expected graduation: **May 2012**

Dec. 2009, University of Florida — Gainesville, FL
Master of Science, Physics

May 2006, University of Puget Sound — Tacoma, WA
Bachelor of Science, Physics; **Minor:** Mathematics

HONORS

GRADUATE

Charles F. Hooper Jr. Memorial Award, University of Florida Physics Department
Student Software Award, Miami 2011 Conference
American Physical Society and Indo-US Science and Technology Forum Student Visitation award
Universities Research Association Visiting Scholarship

UNDERGRADUATE

Puget Sound Academic Trustee Scholarship
Dean's List: Fall 2004, Spring 2006

RESEARCH EXPERIENCE

GRADUATE

MiniBooNE Neutrino Oscillation Experiment

- Analysis leader of the first anti ν_μ double-differential charged-current quasi-elastic cross section extraction
- Executed the first measurement of the neutrino component of an anti-neutrino beam with a non-magnetized detector using three independent analyses
- Designed and carried out the most sensitive measurement of charged-current neutrino interactions external to the detector

MINERνA Neutrino Scattering Experiment

- Performed radioactive sourcing to map scintillator response for the veto system, subsequently fit data for simulations
- Significant role in final detector installation

UNDERGRADUATE

- Demonstrated holographic interferometry through translation and thermal expansion
- Measured the crystalline structure of various salts through x-ray diffraction patterns

PRIMARY AUTHOR PUBLICATIONS

A. A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], "Measurement of the Neutrino Component of an Anti-neutrino Beam Observed by a Non-Magnetized Detector" **Physical Review D 81: 072005 (2011)** [arxiv: 1102.1964]

Joseph Grange [for the MiniBooNE Collaboration], "New Results from MiniBooNE Charged-Current Quasi-Elastic Anti-Neutrino Data", prepared for the *Seventh International Workshop on Neutrino-Nucleus Interactions in the Few-GeV Region*. **AIP Conf. Proc. 1405, 83 (2011)** [arxiv: 1107.5327]

Joseph Grange [for the MiniBooNE Collaboration], "Challenges in Extracting Charged-Current Quasi-Elastic Model Information in MiniBooNE Anti-Neutrino Data", prepared for the *Sixth International Workshop on Neutrino-Nucleus Interactions in the Few-GeV Region.* **AIP Conf. Proc. 1189, 331 (2009)** [arxiv: 0910.1802]

INVITED TALKS

June 2012, **"Separating Neutrinos and Anti-Neutrinos with a Non-Magnetized Detector"** Fermilab
- 2012 Project X Physics Study

June 2012, **"Separating Neutrinos and Anti-Neutrinos with a Non-Magnetized Detector"** Fermilab
- 2012 New Perspectives Conference

April 2012, **"Neutrino Physics Today"** Tacoma, WA
- Weekly public science & math seminar, University of Puget Sound

Dec. 2011, **"Neutrino Oscillation Results from MiniBooNE"** Miami, FL
- Miami 2011 particle physics conference

June 2011, **"MiniBooNE Update"** Fermilab
- 44th Annual Fermilab Users' Meeting

March 2011, **"New Results from MiniBooNE Anti-Neutrino CCQE Data"** Dehradun, India
- Seventh International Workshop on Neutrino-Nucleus Interactions in the Few-GeV Region (NuInt11)

March 2011, **"MiniBooNE: Nuclear Simulation and Neutrino Interaction Measurements"** Aligarh, India
- Special seminar, Aligarh Muslim University

March 2011, **"MiniBooNE: Overview and Results"** Aligarh, India
- Special seminar, Aligarh Muslim University

July 2010, **"MiniBooNE: Overview and Results"** Fermilab
- Part of "Neutrino University", a series of lectures held at Fermilab for summer students.

POSTERS

June 2010, **"Measurement of Neutrino Contamination of MiniBooNE Anti-Neutrino Data"** Athens, Greece
- Neutrino 2010 conference.

May 2009, **"Challenges in Extracting QE Model Information from MiniBooNE's Anti-Neutrino Data"**, Sitges, Spain
- Sixth International Workshop on Neutrino-Nucleus Interactions in the Few-GeV Region (NuInt09)

OTHER PAPERS

A. A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], "Dual Baseline Search for Muon Neutrino Disappearance at $0.5\ eV^2 < \Delta m^2 < 40\ eV^2$" **Physical Review D85: 032007 (2012)** [arxiv: 1106.5685]

A. A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], "Measurement of Neutrino-Induced Charged-Current Charged Pion Production Cross Sections on Mineral Oil at $E_\nu \sim 1$ GeV" **Physical Review D83: 052007 (2011)** [arxiv: 1011.3572]

A. A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], "Measurement of Neutrino-Induced Charged-Current Charged Pion Production Cross Sections on Mineral Oil at $E_\nu \sim 1$ GeV" **Physical Review D83: 052007 (2011)** [arxiv: 1010.3264]

A. A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], "Measurement of the Neutrino Neutral-Current Elastic Differential Cross Section", **Physical Review D82: 092005 (2010)** [arxiv: 1007.4730]

A. A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], "Event Excess in the MiniBooNE Search for anti ν_μ to anti ν_e Oscillations", **Physical Review Letters 105: 181801 (2010)** [arxiv: 1007.1150]

A. A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], "Measurement of ν_μ and anti ν_μ Induced Neutral Current Single π^0 Cross Sections on Mineral Oil at $E_\nu \sim O(1\ GeV)$", **Physical Review D81: 013005 (2010)** [arxiv: 0911.2063]

A. A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], "A Search for Core-Collapse Supernova using the MiniBooNE Neutrino Detector", **Physical Review D81: 032001 (2011)** [arxiv: 0910.3182]

A. A. Aguilar-Arevalo *et al.* [MiniBooNE Collaboration], "A Search for Electron Antineutrino Appearance at the $\Delta m^2 \sim 1 eV^2$ Scale", **Physical Review Letters 103: 111801 (2009)** [arxiv: 0904.1958]

TEACHING

August 2008-May 2009, University of Florida — Gainesville, FL
Discussion Leader

August 2007-May 2008, University of Florida — Gainesville, FL
Lab Instructor

Sept. 2004-May 2006, University of Puget Sound — Tacoma, WA
Teacher's Assistant – Department of Physics

ACTIVITIES

Feb. 2012, **"Career Exploration: Physics and Fermilab"** — Bartlett, IL
- Public talk to Bartlett Public Library

Jan. 2011, **"Physics (and Women Physicists!) in the Real World"**, Jane Addams Jr. High — Schaumburg, IL
- Presentation for Girls in Engineering Science, Mathematics (GEMS) club

Nov. 2011, **"Physics in the Real World"**, Robert Sundling Jr. High — Palatine, IL
- Two presentations to middle school students

Sep. 2010 – Sep. 2011, Fermilab **Graduate Student Association Officer** (elected position) — Fermilab
- Responsible for quality of life issues and social activities for the Fermilab graduate student community
- Co-organized the New Perspectives 2011 conference and 44th Annual Fermilab Users' Meeting poster session

Sep. 2010 – May 2011, Outreach Subcommittee, Fermilab User's Executive Council. Fermilab
- Responsible for spreading outreach opportunities to off-site Fermilab users

May 2011, **"Career Exploration: Physics and Fermilab"** Batavia, IL
- Public talk to Batavia Public Library

Feb. 2010, **8th grade science fair judge,** St. Peter School Geneva, IL

2010 – Present, multiple **Forces and Motion presentations** to elementary school students Around IL

Sept. 2004-May 2006, University of Puget Sound Tacoma, WA
Storeroom Manager – Department of Physics
- Prepared introductory labs and repaired equipment as needed

SCHOOLS

February 2012, Excellence in Detectors and Instrumentation Technologies *(accepted)* Fermilab

January 2012, US Particle Accelerator School *(planned)* Austin, TX

July 2009, International Neutrino Summer School Fermilab

SKILLS

Proficient in C++, ROOT, NUANCE, LaTeX, and Mathematica.